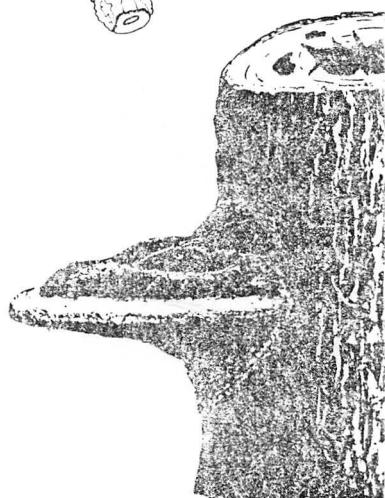
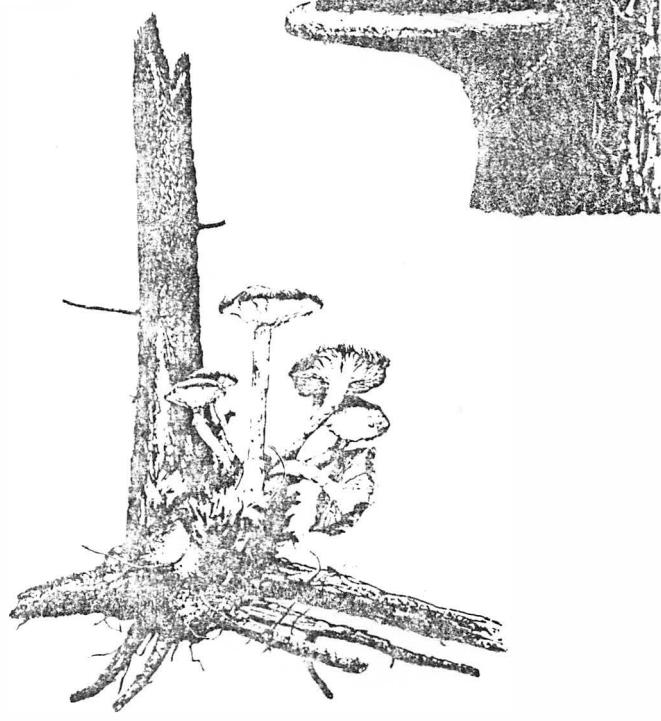
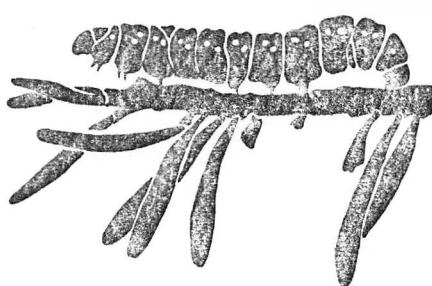
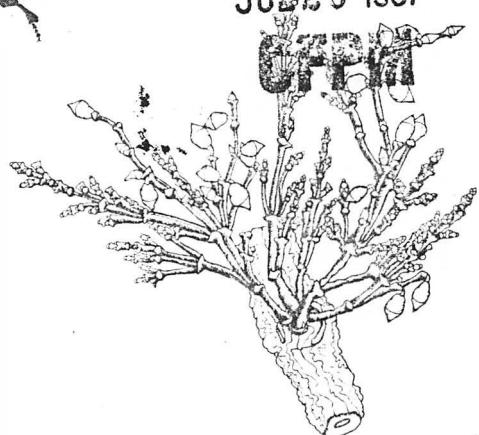
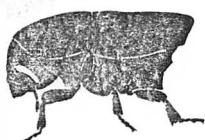
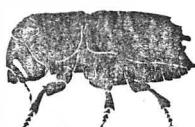


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EVALUATION OF BARK BEETLE AND ROOT ROT ACTIVITY
IN THE MAD DOG TIMBER SALE PRIEST LAKE SUPERVISORY AREA

MAY 1987

By

R. Ladd Livingston, Forest Entomologist
and
John W. Schwandt, Forest Pathologist

Report No. 87-6

EVALUATION OF BARK BEETLE AND ROOT ROT ACTIVITY
IN THE MAD DOG TIMBER SALE PRIEST LAKE SUPERVISORY AREA

INTRODUCTION

At the request of the Priest Lake Supervisory Area, John Schwandt and I visited the Mad Dog timber sale on May 7, 1987, to look at various forest pest problems, specifically, the Douglas-fir bark beetle and root rot. While in the area we also observed part of the sale that had been underburned to treat slash and to kill some small, residual, standing, undesirable trees. We were accompanied on this visit by Roger Jansson, Forest Area Manager; Ed Robinson, Senior Resource Manager; and Geoffrey Meek, Senior Resource Manager-FM.

DESCRIPTION

The area is described, in part, as follows from the sale plan:

This 534-acre area lies near the confluence of the North Fork and the Middle Fork of the East River (see map). The elevation varies from 2,400 feet to 3,050 feet. Slopes vary from 0 to 80 percent and average 35 percent. All aspects are found. The majority of the sale area is well drained.

Habitat types vary from hemlock clintonia, ginger phase on the flatter, moist areas to Douglas-fir/ninebark, ninebark phase on the slopes and ridges. Small areas of cedar type occur along an intermittent creek.

The majority of the sale consists of a mature, moderately stocked stand composed primarily of Douglas-fir, larch, cedar, grand fir, and ponderosa pine with little or no reproduction.

OBSERVATIONS

Underburn Area

In the underburned area there were many small trees that had been killed purposely. There were also many larger, leave trees that were scorched to varying degrees, from very light with obviously no damage, to very heavy, with possible heavy damage in some cases.

Active Timber Sale Area

In the active timber sale area we first looked at logs that were in decks along the road and found them to be heavily attacked by various bark beetles. The Douglas-fir were being heavily attacked by the Douglas-fir beetle and by ambrosia beetles. So many Douglas-fir beetles were being attracted to the

sites that they were even making exploratory attacks in some of the decked ponderosa pine. These pines were also being attacked by ambrosia beetles and the pine engraver, *Ips pini*. We also found some standing, faded trees that originally had been designated as leave trees. They were not faded at the time the sawyers were cutting. We saw some trees that were still green, yet had conks of the pouch fungus Polyporus volvatus on portions of the bole. Apparently, the green trees had been strip attacked or unsuccessfully attacked in 1986 which allowed the fungus to grow and produce the conks we saw this spring without killing the trees. We also observed root rot activity just above the lower road at the top end of the sale. It appeared that *Armallaria* is the principal root rot fungus present. Several of the trees that had root rot were fading and were presently being attacked by Douglas-fir beetles.

DISCUSSION

Underburn Area

In the underburn area the trees that were heavily scorched will be especially susceptible to attack by bark beetles and flatheaded and roundheaded wood borers. The wood borers may constitute a potential threat at this site as certain species can build up a large population and then make attacks in living trees. On occasion they have the capacity to cause mortality, especially in pole-sized Douglas-fir.

Pine Engraver

While we saw the pine engraver beetle making attacks in the decked ponderosa pine, the general lack of this tree species throughout the site indicates that this beetle does not present a serious threat to the resource. Its attraction to the logs in the deck will actually help serve as a control mechanism as these beetles will all be transported out of the area and destroyed by the log processing activities at the mill. These logs in the decks are serving as excellent traps for the beetle. Also, because there are relatively few ponderosa pine at the site, I do not feel that you have to be concerned about a population build-up in the slash that might have been left in the logging operation. However, if there are other stands with higher concentrations of ponderosa pine elsewhere in or near the sale area, the beetles could move into them and cause damage.

Ambrosia Beetles

Since the logs in the decks were being hauled away from the site soon after they were being cut, the ambrosia beetle should not have time to construct long tunnels. Processing at the mill should eliminate most, if not all, of the potential damage these insects might cause by cutting them off in the slabs. Most of the holes caused by these insects are outside of the scaling cylinder, and, according to the manual of instruction for log scaling, no defect is counted for insect holes smaller than one-quarter inch.

The presence of white boring frass caused by ambrosia beetles around the base of a standing, apparently healthy, tree is an indicator that the tree is

stressed, and that, for all practical purposes, it is dead and should be removed in any harvest operations.

Douglas-fir Beetle

The extra warm, dry spring that we have experienced this year has allowed the Douglas-fir beetle to fly and make its attacks earlier than normal. By the 7th of May when we visited the sale, the peak beetle flight had already passed. This is three to four weeks earlier than normal. This early flight, coupled with the logging activity, has resulted in having many beetles attracted to the log decks and being hauled away as the logs were transported from the site. Thus, the logs have been serving as trap trees and have provided some degree of population control for the beetle. We have seen this type of activity (i.e., using the log decks as trap trees) in several other areas.

The standing green trees that had the volvatus pouch fungus on them are a rarity and do not need to be considered as an indicator of any special conditions for the site. It is not common to find strip attacks where brood and adult beetles have been produced in standing Douglas-fir. It is more likely that these trees were actually resistant to the beetles but not to the introduced fungus.

One source of the Douglas-fir beetles that were being attracted to the log decks may have been the faded trees that were approximately 150 yards down the hill. Unfortunately, these trees had not faded at the time the loggers were there and were missed in the felling operation. Unfaded, attacked trees are often easily missed because the boring frass may have blown away or faded to the point where it is not easily seen. This would especially be the case with these trees since they would have been attacked last year, in 1986. When harvest cuts are being made in areas of known Douglas-fir beetle activity, extra care should be taken to examine all trees for the presence of boring dust or other indicators of attack.

Root Rot

The presence of the root rot in the sale area will require special management considerations for restocking the stand. Fortunately, the root rot was not very commonly observed. Therefore, it is important to keep track of the infected areas so that they can receive species less susceptible to root rot when regenerating the site. There is no need to change regeneration plans for the entire area if these few small root rot pockets can be identified and treated differently.

RECOMMENDATIONS

Ambrosia Beetles

Since the presence of the holes and boring frass caused by these beetles often causes concern on the part of an observer, it might be good to notify the purchaser of the logs that these beetles are present. If he is concerned he should process the logs immediately as the beetles will continue with their

tunneling while the logs are sitting in a deck. Again, according to the scaling manual there is no defect shown for holes less than one-quarter inch in diameter, so there should not be any problem. However, through experience with other sawmills I know that they often are concerned and have, at least on one occasion, changed their schedule to immediately process logs that had beetles in them.

Douglas-fir Beetle

1. In order to prevent any beetles that still remain in the area from attacking standing trees left in the sale area or outside in uncut stands, Area personnel should cut several truck loads of Douglas-fir trap trees immediately adjacent to the sale area. These should be cut in groups of three to five trees and should be at least 15 to 18 inches in diameter or larger. These trap trees should be felled into the shade as much as possible, because when they are felled into the sun, they do not serve nearly as well as an attractant for the beetles. These trees should be left in place until at least the middle of July and then hauled away for processing. They can stay on site longer if necessary but definitely should be hauled before the woods are closed by snow this fall. Leaving them beyond that time would allow those beetles to build up higher populations and escape next spring to attack other standing trees in the area.

The Area personnel should watch the trap trees, and if it appears that they are filling up rapidly, they should consider cutting another group to absorb any beetles that continue to come. This monitoring should continue through the middle of July as there is often a second flight of beetles which takes place later in the season.

The use of trap trees is a standard practice that can be utilized any time we suspect that there might be free flying beetles in the area. Trap trees can be either cut dropping them into the shade or left standing but baiting them with pheromone attractants. The use of pheromone attractants to stimulate attacks in a specific area has been shown to be an effective tool in helping to maintain beetle populations at low levels. They can be used in small clearcuts, right-of-way cuts, or in any other situation where the forester can be assured that the trap trees will be removed before flight the following spring.

2. The practice of early spring harvest activity in Douglas-fir stands should be encouraged. This practice has created a large number of trap trees that, in several instances, has proven to attract large numbers of Douglas-fir bark beetles into the cut logs. This has taken place either while the trees were on the ground after felling or after they have been skidded into decks. This has very effectively provided a mechanism to attract many beetles to the logging site from where they have then been hauled away to the mills and destroyed in the milling process. This definitely is helping to control and manage beetle populations in those sites. There may be some potential hazard in this in that more beetles may be attracted to a site than can be absorbed by the cut trees causing the beetles to spill over into standing leave trees. However, this does

not seem to be a very likely occurrence as long as the cutting operation continues throughout the spring flight period.

3. As a general practice, the Area should continue to accelerate their management in stands of old growth, large-sized Douglas-fir. Stands of this nature that are at least 50 percent Douglas-fir are high hazard stands relative to potential attack by the Douglas-fir beetle. The dry springs and summers that we have recently been experiencing are putting extra stress on the old growth trees making them highly subject to attack by the Douglas-fir bark beetle. This past year we have seen a definite increase in the number of Douglas-fir bark beetle attacks, and we expect that this pattern will continue until we see some change in the weather patterns.

Root Rots

The root rot areas should be planted with less susceptible species such as larch and ponderosa pine with possibly a few white pine included as this appears to be an excellent site for these three species. As mentioned previously, it is not necessary to plant the entire sale area, but only those sites which specifically have been identified as root rot pockets. For the future in other sales, it would be advisable to identify in some way the locations of these root rot pockets so that they could be planted specifically with less susceptible species. This would be especially important in those sites having a large component of Douglas-fir and/or grand fir and where natural regeneration is being considered.

EXHIBIT A

